

# MASSACHUSETTS PLOUGHMAN



## AGRICULTURE

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Correspondence from particular farmers concerning the results of their experience is solicited. Letters should be signed with the writer's real name, in full, which will be printed or not, as the writer wishes.

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#### AGRICULTURAL.

In a small garden worked by hand, one man with a wheel hoe can do the work of several men with a common hoe.

To prevent pigs from getting the thumps compel them to take plenty of active exercise. The busy pig seldom gets sick.

A good vine for banks or places where it is desirable to keep the earth firmly in position is the Virginia creeper or the Japanese honeysuckle.

Farmers who have no silo should plant some mangolds this spring. They provide a lot of cheap and juicy food and they are better than medicine.

Liquid manure is a very quick acting fertilizer, especially for grass. It loses nitrogen quickly and should be applied as soon as possible after being made.

Ants sometimes give a good deal of trouble on lawns. They can be disposed of quickly by pouring an ounce of bi-sulphide of carbon into the several holes, then closing the holes.

A good treatment for the strawberry bed that has been mulched during the winter, is to remove the mulch, stir the ground around each plant, and then to replace the mulch. The result will be lots of berries and they will keep clean.

An article has been published in some of the poultry papers stating that sassafras poles used for perchers would prevent lice—nonsense. Another tells how to kill hawks by giving nux vomica to chicks in their feed—more nonsense.

W. A. CROSBY.

Asparagus has been recommended as a lawn plant and has occasionally been used as such by setting a few plants here and there in borders on the margin of shrubbery, as single plants and in small groups. If one did not know the useful character of asparagus it would be considered highly ornamental.

A mixed crop of oats and Canada peas came next to corn in tests made in Cornell Station. The crop is pronounced worthy of a place on every farm where stock is kept, being valuable for a pasture, for soiling and for hay. The yield was 12 tons per acre, green. Oats and peas should be planted as early in the spring as condition will permit.

Studies of the root system of red clover grown at the Minnesota Station showed that the amount of roots and the depth to which they penetrate vary greatly, depending on the character of the land. In a favorable soil a plant one month old had a root extending seven inches into the ground; at two months old it had reached a depth of two feet; at five months its length was five feet six inches. The root development is most extensive on drained land. The stand is also better on drained than on undrained soils.

#### Scheele's Green.

This arsenic poison is in color like Paris green, but it is cheaper and more soluble. For that reason it is becoming popular as a substitute, and it is considerably less trouble to keep it stirred when mixed with water than with Paris green. Its strength is about equal to that of Paris green.

#### Selecting Asparagus.

In starting an asparagus plantation much depends upon the selection of plants. Choose crowns with large buds and well developed roots. One year old plants are fully as good as two year olds.

Asparagus plants are male and female. The male plants which do not bear seed are to be preferred, because all the strength goes to the roots making larger and earlier stalks the following spring. It is asserted that a plantation of male plants will produce a third more than a field of female plants. The stalks from the male plants are larger and finer and command a higher price.

#### Melons for Stock.

Some of the Western stock farmers feed large quantities of citron melon to stock.

The variety used is a cross between the small citron and a large kind of watermelon, it reaches a weight of twenty pounds or more. These melons are grown in the same manner as common varieties.

The yield is enormous, and the melons make excellent, juicy food for both cattle and poultry. They are rather watery and have only about a third of the nutritive feeding value per ton of corn ensilage; but their greater value is to furnish a change and keep up the health and appetites of a third of the nutritive feeding value per ton of corn ensilage; but their greater value is to furnish a change and keep up the health and appetites of a

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#### Have a Standard.

In a paper have recently read an extract from some experiment station bulletin, advising dairymen to ascertain the tastes of their customers for butter and then furnish each customer just the kind of butter preferred. The quotation took the ground that even if a customer had a peculiar or even unnatural taste it would pay a dairyman to cater to it, for if he succeeded in meeting it he could always retain such customer.

Now what earthly use can a standard of excellence for butter be if butter makers are not to be encouraged to attain to such standard. We have dairy fairs and employ expert judges to examine the butter exhibited and score it according to its quality. Now what can be the good of all this if butter makers are to be advised to chase around the villages and cities to ascertain the tastes of a half dozen or more customers, and then undertake to make a different kind of butter for each one. Can there be anything more absurd?

The common sense view to take of the matter is for every butter maker to aim to make butter that would be scored by an expert as high as the best commercial butter and make it as much better than that as they can. Then sell it on its merits and it will be the means of educating the consumers of it to a knowledge of first-class article. Let it go at that. The writer trusts we will not hear any more nonsense about making a dozen different kinds of butter for a dozen different consumers. What would be thought of a manufacturer of any other article of food, that would undertake to cater to every conceivable taste instead of establishing a standard of excellence?

F. W. MOSELEY.

Clinton, Iowa.

It is a good plan to handle calves somewhat while they are learning to drink in order to make them tame. The great advantage of the home-raised calf is its tameness and good habits.



BARREL STRAWBERRY CULTURE.

#### Machine Milking.

The Ontario experiment farm at Guelph is still experimenting with a milking machine which it brought over from Scotland.

It is found that the milker saves considerable labor, and with a few improvements and changes it is expected to become practicable to do all the milking by machinery. One of the worst defects now is that the cupping allows dirt and impurities to get into the milk. The action of the machine imitates somewhat the sucking of a calf, and it is said that the cows will be more quiet than when milked by hand.

#### Subduing a New Milker.

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#### Barrel Strawberry Culture.

Our illustration this week, which is reproduced from the columns of American Gardening, represents an unique method of strawberry culture which has become quite popular and about which there has been much inquiry. It shows a barrel with a full crop of strawberries standing on a platform wagon, as Mr. Ohmer (who may be seen in the picture) exhibited it in the streets of Dayton, Ohio. Mr. Ohmer is very enthusiastic on the subject, growing last season sixty barrels on his place that averaged one-half bushel of strawberries to the barrel. He claims he can grow 1250 bushels of strawberries per acre with no weeds to fight, and no mulching, only plenty of water.

Mr. Ohmer's circular giving the details of cultivation and printed in American Gardening is as follows:

"Take any iron-bound barrel, except one which has been used for pickles, sauerkraut or vinegar; remove all hoops but four and bore four holes in the bottom. Then space holes around the barrel so that twelve plants will go around it; five rows high will make sixty plants to the barrel, (the fifth row can be placed five inches from top of barrel). So as to make the holes of proper depth, bore two holes, one above the other, using a bit one and one-half inches, and cut out the wood between the two holes, you will then have a hole one and a half by three inches. Put about two inches of firm gravel or coarse sand in the bottom of the barrel. When planting put the plants as near the top of the holes as possible, to allow for settling of the soil. Use clay well mixed with rotted manure; put in till about three inches above the first row of holes, being careful not to have it too wet.

"Carrots will do better delayed until the first of May. Potatoes may be planted in April, but will also do well if not planted until the first of May in most seasons. Celery may be planted in the open ground any time during April and May, but nothing is gained by hurrying, as most of its growth is made late in the season. New plots of asparagus and rhubarb may be started any time in April and May. Most of the above vegetables will do well on stable manure, but radishes and turnips will be of better quality if fertilized with phosphate.

"The kitchen waste from a family of seven is found by a New Jersey experiment station to amount to over a ton and one-half per year, about two-thirds of which was vegetable matter. It is estimated that the kitchen waste of all the cities and towns of New Jersey is worth for fertilizer and other uses half a million dollars per year.

"After planting, the tile remains in the barrel; have it empty so as to take the water. In watering, you water in as much.

#### Early Melons.

Melons and cucumbers may be obtained early by starting the seeds on sods four inches square turned upside down and placed under glass. If kept well watered the plants will flourish, take root in the sod and be well started when the weather is warm enough to transplant them into the open field. This plan is about the only way one can be sure of watermelons in central and northern New England. Another way is to start seed inside of a turnip which has been scraped out, leaving only a thin wall. When the turnip is set out it will decay, allowing the melon to take hold on the soil.

#### Quantity of Seeds.

In planting a farm garden, it is sometimes doubtful how thick to sow the seeds. Early in the season it should be sown thicker than when the soil becomes warm.

The following list will give an idea of how thick seed should be sown in garden culture: Asparagus, bed of fifteen square yards, one pint; Beet, row fifty feet, two ounces; Cabbage, bed of eight square yards, one ounce; Carrots, drill of one hundred and twenty feet, two ounces; Carrot, bed of twelve square yards, two ounces; Celery, four square yards, one ounce; Endive, four square yards, one ounce; Bush beans, row eight hundred feet, one pint; Leek, two square yards, one ounce; Lettuce, four square yards, one ounce; Onions, nine square yards, two ounces; Parsley, row eighty feet, one and a half ounces; Parsnips, drill of two hundred feet, two ounces; Peas, early, row sixty feet, one and a half pints; Potatoes, row thirty feet, half peck; Radishes, four square yards, one and a half ounces; Spinach, ten square yards, two ounces; Turnip, four square yards, one ounce.

"After planting, the tile remains in the barrel; have it empty so as to take the water. In watering, you water in as much.

#### Massachusetts Horticultural Society.

[Address on "Plants and Parasitic Fungi," by Professor Edward A. Burt of Middlebury College.]

Professor Edward A. Burt of Middlebury College, Middlebury, Vt., delivered a lecture recently before the Horticultural Society on "Resistance of Plants to Parasitic Fungi." He said in part:

Fungi are plants with the vegetative body not differentiated into stem and leaves. They do not contain the green grains called chlorophyll and they are propagated by spores. There is of late so much said of the destructive work of parasitic fungi that one must not conclude that all fungi exist only to cause disease or death of plants. When the horticulturist sees his plants ruined by rust, the damping-off fungus, mildew and the like, and realizes that all these troubles are due to fungi, he sees small compensation in the mushrooms that he has raised and concludes that fungi could be well spared from the world.

Fungi have an important and a peculiar work in the world's economy. The green plants are constantly converting the inorganic matter of the soil into material for their own use. Only a small part of this material is used as food by animals, and is broken up into simpler compounds and returned to the soil.

At the end of the season the unused plant matter remains to accumulate on the ground, and if left untouched, in the form of dead leaves or wood, this matter would be of no value to the soil and its stores of carbon, nitrogen, etc., could not be used in that form as food for green plants. Decay must take place first. Fungi are the causes of decay, and they, in forms ranging from bacteria, to mushrooms, attack the decaying vegetable material and make prompt return to the soil of the plant and animal remains which would otherwise be withheld from it.

We now turn our attention to fungi in their injurious relations to plants. Parasitic fungi are those which draw their nutriment from living plants, by penetrating their tissues. Parasitism depends on the ability of the fungous to maintain its existence on the host and on the inability of the latter to repel the invasion. The spore of an obligate parasite must fall on a suitable species, and then germinate and throw out a germ-tube to penetrate the host. And this must be done before the small amount of food substance in the spore is exhausted. This is a very critical period, and many of the spores do not survive it. Then after germination too dry an atmosphere will kill the parasite. An equally fatal result follows if the delicate germ-tube has to creep over a surface coated with poisonous salts or other fungicides; this is the philosophy of spraying for fungi as now practiced in horticulture. Then the fungus must be able to penetrate the defensive structures on the outside of the host, and must maintain its existence from food derived from the living food.

The nature of the attack made by fungi against each surface of the host, and the resistance encountered, may be considered with advantage in connection with some common diseases which have been best studied. Fungi which attack the roots of some plants gain an entrance through the soft structure of the tips of the rootlets, or by passing by way of the root hairs through the harder parts of the root. The fungous causing the club foot of the cabbage, turnip, etc., causes the leaves to wilt and become yellow in from three to five weeks, and the characteristic swellings may then be found on the roots. This disease is especially troublesome to truck farmers, because they do not practise a long-period rotation of crops. Parts of infected roots are left in the ground and the spores liberated by their greater freedom from the black knot, are well worth the consideration they receive. By careful hybridizing experiments, Europeans have obtained vines capable of resisting phylloxera and downy mildew. Erickson's researches have shown that there are some varieties of grape able to resist the most frequent kinds of rust. He has also found that disease is transmitted to the descendants of plants, though hitherto the opposite has been thought to be true.

turnips or cabbages are grown yearly. Little is known of the resistance which plants offer to this disease. One of the cruciferous which is most susceptible to this disease seems to escape extermination because its seeds are so widely distributed that not all fall in an infested seedbed.

Infection of the root is more often by mycelium, which creeps from root to root only a few inches below the surface of the ground. The stem of herbaceous plants and the leaves and young shoots of woody plants are covered by a layer of cells called the epidermis, the outer walls of which is waterproof and prevents rapid evaporation of moisture from the tissues of the plant. Water vapor is constantly exhaled from the epidermis through openings called stomata. The epidermal covering withholds from spores on its surface moisture which is necessary for their germination, and in dry weather they generally fail to germinate. A long period of moist weather, however, favors germination and enables the germ-tubes to attack the epidermis. In the powdery mildew a cylindrical thread, called a hypha, branches and spreads over the surface of the epidermis, and at various points branches push down and gain entrance into the protoplasmic part of the cell. Here the end enlarges. Such branches are called haustoria, and through these the fungus draws its sustenance from the host, and the hyphae remain on the surface, forming the familiar white patches. These powdery mildews are easily destroyed by any substance poisonous to the fungus but not to the plant (such as flowers of sulphur) being dusted over the leaves.

The bacterial brown rot of cruciferous plants is of great interest because the infecting organism so successfully avoids the outer defences of the host. The cabbage has openings along the margins of its leaves, called water pores, from which superfluous moisture escapes and stands in drops along the edge of the leaves. Bacteria which are lodged there simply swim through the pores into the leaf and there spread the disease. Infection also occurs by bits of insects which have been feeding on diseased plants.

The bark of woody stems forms an effectual barrier against parasitic fungi very destructive to wood. When wounds occur which break through the bark, they are repaired by the new growth of cork or of callus and cambium which the tree makes. In deciduous trees we can cover the wound by grafting wax or paint and so diminish the risk of infection. The mycelium of many fungi extends only a short distance beyond the point of infection. This is the case with "spot disease" of leaves. In other diseases the spread may be greater and even cause the death of the whole plant.

Healthy, vigorous plants are less subject to disease than feeble ones. Fully ripened fruit is very subject to rot. Tubefoot states that fungi can frequently penetrate withering plant organs, while they could not infect the fresh living tissue. In some cases a fungus, though well established, may receive such

**Feeding Cows.**

HOW OFTEN, HOW MUCH, AND WHAT TO FEED.

The unsettled is ever the battle-field of those inclined to positiveness, and of those who view questions narrowly. This is true of unsettled problems in feeding, among them being the time or times of feeding. Foreign trials show or appear to show that a larger amount of food is digested when it is given three times daily, than when fed twice. Practical trials on this subject are few and inconclusive. In feeding upwards of one hundred cows I find it important to ascertain the bearing of methods on results. In a rough way, the field has been covered with my herd with the result that two feeds only are given per day. No marked nor any certain difference in result has been noted between feeding twice and three times.

One feeding with me means several successive courses that keep the cows in continuous eating until a meal is finished. Skilled feeding now includes the use of various foods at a meal, or a meal is served, as for the human family, in courses as far as it is made up of various foods. The length of such a meal is the time required to satisfy the appetite under continuous consumption.

Custom rightly determines that ensilage should be followed by the grain feed, these being placed on the ensilage, the system being a convenience, a time saving method. This ensilage is given after milking, that its bacteria set floating in the air by its handling may not fall into the milk. After these come the coarse fodders of the morning. It is preferable on account of the factor of palatableness previously discussed, to give this in more than one foddering.

If the full amount of the economic capacity of a cow is given at once, she will not consume it, providing she is a cow of large milk producing power.

She will select at first the most palatable parts and breathe and drool on the balance until its reduced palatableness abridges the desire for it—a point short of full consumption of food. This can be avoided by smaller and smaller fodders until every cow has reached the end of desire. This method of feeding has the merit of increasing the ratio of coarse foods that may be fed, and of decreasing the ratio of concentrated foods required. It also enables the more successful feeding of the poorer classes of rough foods.

This latter class of foods I have been most successful in feeding the last thing at night, being careful not too far to dull the appetite by nearly full rations for their necessities in the previous foods. At that time there is no immediate succeeding food for the cows to fall back upon, and a half of the twenty-four hours before them until the next foddering. This the cows appear to understand and fall to and eat, finishing it up by morning.

We are prone in these modern days of the reign of philosophy to peer into the reason of things. If it be true that two meals per day answer for a cow and will not for a horse, pig or man, the explanation usually given, that the cow's stomach or stomachs are a storehouse or store-houses of food, is probably a correct explanation of the effect noted.

The amount of food that shall be given is of continuous consideration in the press. The formulas kept fully before the public by the dairy press, answer the question for the cow assumed to be standard. But when we come to the concrete problem, the individual cow, we are confronted by her limitations. Beyond all questions a great ratio of our cows as we now have them, may eat, and in the hands of extra good feeders and poor breeders do eat, more than they turn to advantage into milk.

I have several cows, all fair milkers, that I design for the butcher, yet, in a doubled ration of grain, little, and in some cases no response is seen in the pail, whatever may appear on the ribs. Too few err in over feeding coarse foods, to press the point as related to these foods.

In feeding concentrated foods, we of the East who buy all of the feeds, and many of us do, and most of us are coming to do this, are sharply confronted with the question of the right ratio of grain to feed. For every pound of grain fed, one and one-half pounds less of our own foods, the sale of which is the aim of our farming and the source of our income. Grain feeding could be carried to such an extent as to eliminate any home sales of fodder, as in the Miller system of cow feeding, which does, as it purports to, support an animal, as I, in several trials proved, even receiving two pounds of gain daily on a steer on grain alone.

Just where the profitable limit of the exchange of another's food for our own comes in is determined by the capacity of the cow, price of food, and of the dairy product, and will vary where these conditions vary, and hence can not be a uniform amount, or there can be no standard amount.

I have come to regard a cow as above the average in capacity, when I can afford to give her more than seven to eight pounds of grain daily. This

amounts eliminates the sale of ten to twelve pounds of hay to a cow. As I rate my fodder at \$10 per ton, grain must be \$15 or under to make the exchange even, except (and the exception is reason enough) as grain being more digestible places less tax on the system, calls for less water in the system to heat and volatilize, digests easier, and for a good cow is eaten in part as excess food—all merits. My best milkers get ten pounds of grain for a while, and the poorest six pounds. These amounts are reduced as the milk decreases, but follow the decrease, not precede it, so that for the herd only six to seven pounds are averaged for the two hundred days they are fed at the barn.

More and less than the amounts stated have been fed experimentally during the past winter, but when all factors have been weighed, grain at \$18 per ton has not appeared to pay for heavier amount than named. The trials of Prof. Watson, of Robertson, and the views of John Gould and others, coincide with the conclusion that large rations of grain are more inviting in theory than in practice. Wherever the breeder, coarse foods are cheaper in price, and his art should be bent to growing them, and in the palatable kinds, to gather them in best form, and to feed them in most enticing ways and when their best work is done, then to come in with all the grain a cow will pay for.

One caution I desire to leave: That is not to construe this letter as opposed to full feeding, but rather as one appealing for adoption and in encouragement of the feeder, and the breeders to keep pace with each other. It is largely useless, for one to out-travel the other.—J. W. Sanborn, in Hoard's Dairyman.

**Dairy Dots.**

It is the comfortable cow which fills the pail with milk and the milk with butter fat. There are some things which can be remembered with profit.

Many an animal turned out into a cold yard to drink icy water goes back again without drinking, and keeps his throat until actually forced to slake it.

It is idle to work for nothing when it can be avoided. Perhaps you have been wintering stock not good enough to pay for the good feed and care you have given them.

Remember that even on the best pasture a daily feed of bran will pay well.

The heaviest bran is not always the best, but that which weighs 18 or 20 pounds to the bushel.

It is the dairyman who has provided an abundance of good winter feed for his cows who will pocket the difference between winter and summer prices for dairy products. In this lie the profits.

Grinding the feed for the stock will soon save more than will pay for the extra labor and expense, whether one owns a hand machine or a larger one in common with a company of his neighbors; but there is such a thing as grinding too fine.

No ration will keep up a constant flow in the dairy, for there will be shrinkage as lactation advances, but let there be a generous system of mixed feeds and as few ups and downs in temperature as possible, and the shrinkage will be at a minimum.

It would be better if horses and cattle could drink little and often in cold weather, as well as in hot days. Getting very thirsty, they take in so much at one time as to check the process of digestion, instead of assisting it, and kill the whole system, beside.

Our pasture fields are often those which will least pay for cultivation; they get no care, and any stock which picks up an existence off them is considered so much gain, though they do not even pay taxes. Those pasture fields can be made better.

If a cow does not enjoy the operation she will soon retire from the business of giving milk. Do not milk her out in the cold, nor in a hot stable, nor where the flies torture her, nor in a muddy barnyard, nor where she will be annoyed by the dogs or the children.

For varieties I grow Thompson's Early, Prolific and Cuthbert, they are hardy here on Long Island.

With thorough shallow cultivation and severe pruning an acre of red raspberries will prove a profitable investment in almost any locality. The berries must be picked at least every other day and each grower must decide for himself as to the size of the basket suited to his market.—Strawberry Culturist.

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Advanced methods of cultivation enable us to grow two tons of hay from land which formerly produced but one, and 100 bushels of corn where formerly but 50 grew. Just so in cattle feeding and breeding—we can now market as good animals at two years old as we once did at four.

Many little secrets of the dairy are being ferreted out continually of which the world is contemptuous. When men who have spent their years in investigation confess that milk is today a great mystery to them, what must it be to the man who has never given it an hour's study or reading in his life?

A few head of good animals, whether cattle, horses or hogs, are what produce the profit. Where a large number is reared by one breeder the personal attention given to each is the very slightest. This is especially true of horse raising, when the training and handling are largely superficial, aside from the training for speed.—Farmer's Guide.

**How to Grow and Manage a Model Acre of Red Raspberries.**

In setting an acre of red raspberries let the planter first understand that an acre of them well cared for will last at least ten years.

If you have an acre of sandy loam nearly level you have a model soil for raspberries although they grow and thrive on a variety of soils. Plant the acre to potatoes or some hood crop for one year cultivating and fertilizing heavily. In the fall spread on a good coat of horse manure and plow deeply in the spring. Harrow until thoroughly pulverized, then mark the rows six and one-half feet apart, using a plow and going twice in each furrow to straighten all crooks and leave a straight furrow about ten inches deep.

If you do not grow your own plants order them early of some reliable nurseryman, with the agreement that they are to be shipped at a certain specified time and the earlier you get them out in the spring the better stand of plants you will have. It is very essential that the plants should nearly all live as it is hard to fill in gaps in the rows and growers lose much time and money from this one thing. Have a boy drop the plants and do not expose their roots to the air or sun any longer than is absolutely necessary.

Set the plants two and one-half feet apart in the furrows taking hold of them by the short piece of cane and walking in the furrow, draw the soil from the sides of the furrow and pack it tightly about the roots of the plants with the feet, but do not fill the furrow entirely up except around each plant as the cultivator will soon fill in between the plants and save a good deal of hoeing by covering all weeds that may start in the row.

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Henry Talcott, ex-dairy commissioner of Ohio, says: "I can make from \$50 to \$75 per cow from winter dairying easier than I can make \$25 to \$40 in summer. Therefore I have my cows come fresh in fall and early winter."

**Took Hood's in the Spring****It Completely Cured a Dreadful Scrofula Humor****From Which He Had Suffered From Boyhood.**

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If a cow does not enjoy the operation she will soon retire from the business of giving milk. Do not milk her out in the cold, nor in a hot stable, nor where the flies torture her, nor in a muddy barnyard, nor where she will be annoyed by the dogs or the children.

For varieties I grow Thompson's Early, Prolific and Cuthbert, they are hardy here on Long Island.

With thorough shallow cultivation and severe pruning an acre of red raspberries will prove a profitable investment in almost any locality. The berries must be picked at least every other day and each grower must decide for himself as to the size of the basket suited to his market.—Strawberry Culturist.

**Feeding the Brood Sow.**

Did any of our readers ever investigate the growth of a litter of pigs and learn by experience what an organized appetite the little fellows are? A Wisconsin experiment, made some years ago, showed that a litter of seven pigs, weighing eighteen pounds when farrowed, had at the end of the third week, increased to ninety-eight pounds or about five and a half times says the Prairie Farmer. To make such an increase the pigs must have consumed a

good deal of food, and it all came in the form of milk from the dam. The fact is stated to convey an idea of the importance of feeding the brood sow liberally during the nursing period, for she must not only sustain herself but must provide for this rapid growth of the young. The liberal feeding, however, should be judiciously planned with a view to other conditions of the problem.

Having tapered the feed down until it is quite light as farrowing time is reached, the sow needs nothing but cool, though not chilly cold water for the first twenty-four hours. Then the feeding should begin light, and full feed should be gradually reached only at the end of about ten days. An observance of this plan is necessary to prevent those digestive disturbances in both dam and litter which carry off so many young pigs, making them wonder, if they can be supposed to wonder,

So soon I am done for.

What in the world was I begun for?

The large losses that occur in litters on the average, especially among very young pigs are in a great measure due to injudicious feeding either in quantity or kind, and it is generally overfeeding that does the mischief. The kind of food given, too, is important. The sow has to make an abundance of wholesome milk of a quality that will produce gains of the kind indicated, and these gains are growth rather than fat. The feed given to the dam, must therefore, be growth making food. This means that it should consist of bran, shorts, oat meal and feed stuffs of that class rather than of the heat and fat making kind, like corn. There is, it is generally admitted, too much corn fed to hogs in the corn belt at best, but there is no period at which the feeding of it is a greater mistake than during the suckling period. After the sow has lain quiet and undisturbed for twenty-four hours a thin bran slop should be given, and this may be gradually thickened, at first with bran, and later with bran and shorts, until after ten days' good liberal feeding is reached, consisting chiefly of the more nitrogenous kind. If methods, of which what has been said is only an outline, are adopted, and if in addition, care is taken to guard the pigs against exposure and overlying, there will be a good deal larger percentage of pigs raised than is usually the case. The question of exposure is an important one, especially with litters that come during the changeable weather of early spring, and unless the swine grower is prepared to give adequate protection, it will be well not to breed for early litters at all.

The time when the flowers blossom is the means of reckoning the comparative earliness of spring seasons. A calendar of spring made by the help of spring blossoms will grow more helpful every year. Let the children hunt for the violets, the first lilacs, the first ladies' slippers.

Set the plants two and one-half feet apart in the furrows taking hold of them by the short piece of cane and walking in the furrow, draw the soil from the sides of the furrow and pack it tightly about the roots of the plants with the feet, but do not fill the furrow entirely up except around each plant as the cultivator will soon fill in between the plants and save a good deal of hoeing by covering all weeds that may start in the row.

Cultivate once a week and keep all grass and weeds subdued. Do not allow plants to bear at all the year they are set out and be careful while hoeing not to cut off the young shoots which will come up side of the cane which may appear to be dead. Early the following spring break off all that remains of the original canes and cut the new growth back one-half. Also fill in all gaps in the rows and hoe thoroughly and keep well cultivated, not over three inches deep, until time of ripening. You will get some berries this year, quite a good crop the next and the third year a full crop.

I always leave the old canes stand until spring as they help to keep the new ones from being broken down with snow and in early spring I make one job of taking out the old and pruning the new, cutting out all very weak shoots and thinning out too many come up in the row. Keep your rows narrow, one and one-half feet being the limit for width, and cut up all plants outside this space as they grow.

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It is the dairyman who has provided an abundance of good winter feed for his cows who will pocket the difference between winter and summer prices for dairy products. In this lie the profits.

Grinding the feed for the stock will soon save more than will pay for the extra labor and expense, whether one owns a hand machine or a larger one in common with a company of his neighbors; but there is such a thing as grinding too fine.

No ration will keep up a constant flow in the dairy, for there will be shrinkage as lactation advances, but let there be a generous system of mixed feeds and as few ups and downs in temperature as possible, and the shrinkage will be at a minimum.

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**POULTRY.****Success with Ducks.**

ED. MASSACHUSETTS PLOUGHMAN:  
DEAR SIR:—Last year I raised about 100 young ducks from a single pair. They grew twice as fast as chickens and ate about twice as much. Still I think with a little more experience I can make them more profitable than chickens. I have no water excepting wells on the farm and do not think it necessary, although a running brook or a pond hole would help them get their living. I keep the White Pekin variety.

The old ducks laid their eggs very early in the morning and I had to watch them to prevent the eggs getting chilled. The duck eggs were all hatched under common hens. The ducklings need plenty of grass. There is no trouble in feeding them as they will eat almost anything and great deal of it. I gave them scalded oatmeal and boiled potatoes mashed together, also scalded corn meal and bran with as much milk as I could spare. I fed them often, but gave them only what they would eat up clean. They must have plenty of water to drink, and their troughs and fountains must be kept clean or the ducks will get sick.

J. B. WESTON.

Massachusetts.

**Young Turkeys.**

The eggs hatch in twenty-eight days. As with chicks, the young turkeys require no food the first twenty-four hours. After that period take them from the nest to a large, dry coop supplied with water and coarse sand, and give them a meal of millet seed or other suitable food. Stale bread and milk is excellent. Many growers feed them with milk curd and some give boiled rice.

After the first three weeks, they can be given corn meal and short mash, and any kind of grain. If there is plenty of room for them to forage, they will get most of their own food in summer after the first few months.

**CARE AND MANAGEMENT.**

Dryness and freedom from lice are absolute essentials. The roosting coops should be perfectly dry and the young turkeys should be shut up in the morning until the dew is off the grass. Both the turkeys and their mother should be dusted with insect powder if lice are suspected. Grease on the heads and under the wings will kill lice.

The turkeys should be encouraged by feeding to come home every night, else some of them are likely to get lost or killed by their natural enemies.

**Leg Weakness.**

EDITOR MASSACHUSETTS PLOUGHMAN:  
DEAR SIR:—My chickens which are kept in a steam-heated brooder house seem weak in the leg. They are unable to stand in some cases and have no life about them.

E. F.

Hampden Co., Mass.

Answered by B. F. Shoemaker.

Leg weakness is found chiefly among chicks raised in a brooder warmed by under heat. Or it is sometimes brought about by high feeding; in this case their bodies grow too fast for the strength of their legs. If the bottom of the brooder is slightly warm it will do no harm, but the most of the heat should come from above, and then you will scarcely be troubled with leg weakness among chicks. Those that have leg weakness will in course of time come out all right, without the aid of medicine, and they usually make the finest specimens as only the most vigorous chicks become affected. Feed finely ground raw bone in the soft food daily, which will strengthen their legs and will be the means of their rapid recovery.

**Poultry Notes.**

Grit is an absolute necessity, even for young chickens. Coarse, sharp sand is what they need. They know how to help themselves if they can get at it.

A popular food is granulated oats. It is in fact one of the best forms of grain food for young chickens, but plenty of soft food should be given also, such as bread and corn cake.

In feeding, I go into the pens and bury the grain in the leaves etc. with my foot. I have been asked by my visitors hundreds of times why I do this. I tell them my birds have to scratch for a living.

C. J. DANIELS.

Those who are making a living out of fowls almost always combine eggs and poultry. It is generally agreed in this section that eggs pay best of the two branches. But to raise some poultry also evens up the work and the income in a more satisfactory manner.

Young chickens drink very often, and quickly soil the water with their dirty bills and feet. The automatic fountains, or other fountains that hold a great deal of water, will quickly get stale, and should be scalded out as soon as they begin to smell bad or they will breed disease.

**APIARY.****Spring Work Among the Bees.**

I know by experience that it pays me to give close attention to my bees in the spring. The weather for the past month has been fine for bees and should be an incentive to do our best by them. Besides I find that white clover is making an excellent start, and everything points to another successful season. So, if we want to get the most out of the business, we must begin now.

Do not go into turkey raising unless there is plenty of pasture unless you are prepared to go to the expense of fencing in a large area. Turkeys require more food and more liberty than chickens. Turkeys have a disposition to get a good share of their living off the farms of the neighbors, and the arrangement is profitable so long as the neighbors do not take a notion to get a part of their living off the turkeys.

Set as many hives at one time as possible, the number also depending on course on requirements as well as space and convenience. It is a mistake to make nests in warm houses, in baskets or on wooden floors. No hives bring forth larger and healthier broods than those which make their nests under a hedge or thicket, exposed to all vicissitudes of the weather. It is wise to open the nest, therefore, in making the nest on the bare turf hollowed out just sufficient to prevent the eggs rolling out of it. A little broken or crushed straw will finish it, and make it look clean and tidy. Place a box or coop over each nest with a door or board in front to shut it up and which can be opened to let the hen out to feed and take exercise.

**Belgian Hare Culture.**

The Belgian hare is a native of Belgium, and is said to be much smaller than those we have here and in England. The English fanciers have bred up, and improved upon it until they have obtained the present standard of excellence. They have evidently been crossed with other breeds to obtain size, for it is no uncommon thing to see an off color, too light or too dark, in the flock. But all should take great care in selecting breeders.

**CARE AND MANAGEMENT.**

A cheap plan is to take a goods box, three by four feet, lay it down on side, knock out one end, and stretch wire netting, one-inch mesh, across two-thirds of the end. Make a light frame to fit in the other third of the space, and cover frame with netting for a door. This makes a cheap hutch, and can be occupied by one doe. Another plan is to take small timbers about one and one-half by one and one-half or two by two inches square, make a frame five feet long, two and one-half or three feet wide and two feet high. Use hard wood lumber one-half or three-fourth inches thick, for the bottom, and box in about half of this frame, and enclose the other half with wire netting of one-inch mesh. Do not make any door or opening in the boxed part, but make door in netting, so that it will be convenient for cleaning out and also for putting in feed and water.

Larger hutches may be made for the young ones, or put them on the barn floor or mow floor, or in any kind of a shed. But see to it that there is no place for them to get out. A park may be made by making a good wire netting fence high enough to keep out dogs, and sink a plank or the netting into the ground so that they will not burrow under. Make a building in center, for a protection for the hares against stormy weather. They must have a dry place to get into. A pile of stumps or logs in the park would be very well for their amusement.

**BREEDING.**

This time of the year is a very good time to begin. Having each doe in a separate hutch and the buck in a convenient hutch, lift the doe from her hutch to that of the buck, and if she does not receive his attentions, place her in her own hutch and repeat each day. This will not have to be repeated often. Always be gentle and kind with them, and they will be your friend. A convenient hutch for a buck is the goods box as described, with lid on top so that it can be opened or removed. Never turn them loose. Don't do it. The Belgian hare is a good thing in its place, but don't make a nuisance of it. They will increase very rapidly. After the doe has visited the buck, she will kindle (or drop litter) in thirty days. If properly cared for, the young may be weaned in five or six weeks, and in a few days breed again. But a few days before she has her young she must be provided with straw or fine hay, which she will place in shape of a nice round nest, and line it with the soft fur of the bees while the trees are in full bloom.

**To Make Durable Fence Posts.**

The following is given as a good plan to make fence posts last longer than they generally do.

In the first place the timber should be cut in mid-winter, split, and allowed to season under cover. Now burn the lower end of the post so that it will have a coal showing from the lower end to six inches above the ground when set. Then saturate the burned part with hot coal tar. The posts are ready then to be set. If not wanted immediately let them stand under shelter with the black end down.

It is claimed that posts fixed in this way will last twenty times as long as those of the same timber cut and set green and without being burned. The extent of fixing them will not be two cents a post.—Farming.

**Hood Farm** FOR SALE.—Large strong bull with some white markings. Dropped Aug. 26, 1897, by Brown Besse's Son, the sire of 6 in the 14th class. Weight, 200 lbs., height, 41½ oz., by Rotan, sire of Upright, the sire of 12 in the 1st including Costa Rica, 10 lbs., height, 41 oz., weight, 90 lbs. 11½ oz., in 31 cases. Write for price.

**Jerseys** Write for price.

**Advantage of Underdraining the Soil.**

In order to secure the largest possible crop yield that our soil is capable of giving us we should see that it contains a sufficiency of moisture for all plant requirements, but no stagnant or surplus water should be allowed to remain in the soil above a reasonable depth for the development of plant roots. Ordinary field and garden crops cannot grow and thrive in soil that is saturated or filled with water.

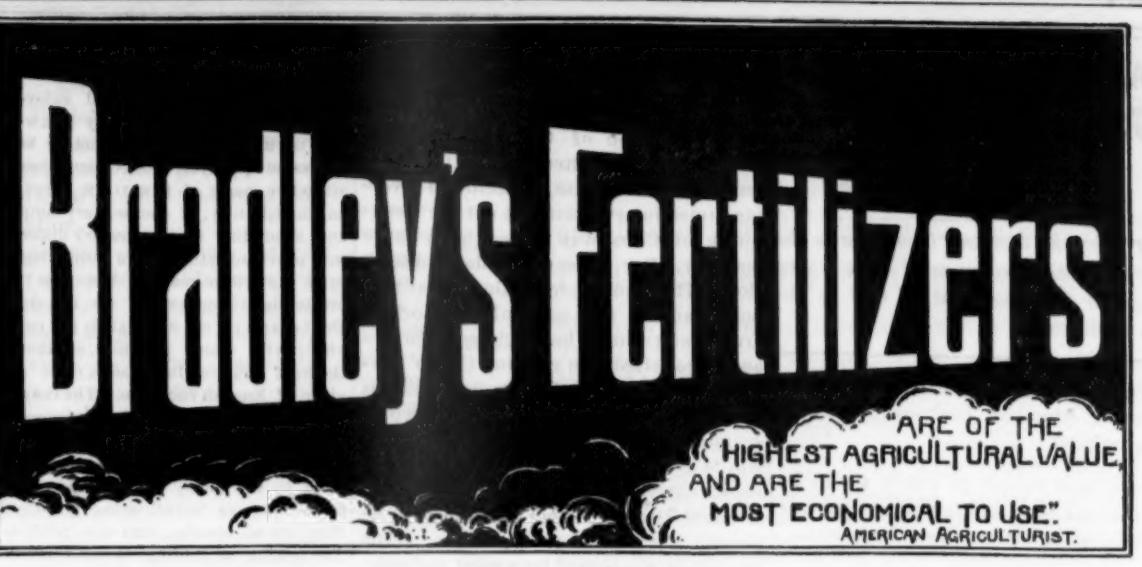
By drainage we mean the removal of surplus water from the soil, either by natural or artificial means. A properly drained soil is one that is moist but not saturated with water. Loose, sandy, or gravelly soils, and those with an open or coarse subsoil, are said to be naturally drained. All heavier soils, and those lying in low places, require artificial means to remove their surplus water, and hence should be underdrained.

Soil is composed of exceedingly small particles of various shapes, which touch each other, leaving various sized small spaces between. By the law of physics, known as surface tension, each particle is covered by a film, or thin layer of water, which it holds to itself over its entire surface. The remaining space is filled with air. Where there is an excess of water the air is excluded—the water taking its place. This should not be, as a soil without air cannot sustain plant life. Where an outlet is provided all surplus water will pass off by gravitation, leaving only the amount held by the particles of the soil, which will not pass off as drainage, but remain to supply the needs of plant growth. The amount of moisture that can be held by the surface tension will depend upon the fineness of the soil particles—a fine clay soil will hold more than a coarse sand. The food which plants take through their roots must be in solution, and the water held by surface tension is sufficient for this purpose. All the water in excess of this is unnecessary and injurious, and should be removed by underdrainage.

Many otherwise excellent agricultural lands are unproductive or do not produce all that might be expected, because they contain too much water. Whether this excess of water comes directly from the rainfall or from leakage of adjoining lands, it must be removed by artificial drainage before such lands can be productive to their full capacity. Undoubtedly there are many soils that are not absolutely in need of underdraining, but unless these are of a very open texture they would, nevertheless, benefit in many ways by being so treated.

The main advantage of underdraining lies, of course, in the removal of all surplus water that may find its way into the soil. Aside from this a great many advantages are derived from the fact that in removing the water it is first passed down through the soil. Rainwater, being of a higher temperature than the soil, thus imparts its warmth to the soil, which is no small consideration in hastening the germination of seeds and making all plant growth more rapid. In a well drained soil the frost comes out earlier in the spring, and the land dries up much more rapidly and is fit for cultivation much earlier, thus lengthening the season of growth, which is an important point in our northern climate. Undrained lands are often too wet for planting until the proper time for such planting is past. We can thus see that good drainage may in many cases make a difference of several weeks' time. In order that growth may proceed rapidly the soil must be warm. A wet soil is always cold, as its natural warmth goes towards evaporating the excessive water. In passing the water through the soil the surface is left entire; the fine, rich particles are not washed away as is the case where the water flows over the surface. Water in passing through the soil carries down with it, and incorporates more closely with the soil, any fertilizing material that may be deposited on its surface, thereby bringing it within easier reach of the roots. Rainwater in falling through the air carries down with it considerable of fertilizing material which the soil filters out and retains, leaving the water to flow off clear. Water in percolating through the soil makes it more open and porous. This is especially advantageous in heavy clays, so that plants can penetrate to a greater depth and spread through a greater extent, thus providing themselves with better facilities for gathering food and moisture.

In periods of drought the danger of insufficient moisture is materially lessened as the power of the soil to absorb rain and dew is increased through better capillary movement, thus spreading through the soil what moisture may be available. If water is flowing through the drains from a better watered section it may be drawn out by capillary attraction where needed. This process of capillary attraction is well illustrated in the passage of oil through the wick of a lamp. We can see, too, that in periods of drought water may be drawn toward the surface from considerable depth. A soil that is usually water-



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**THE NEW POTATO CULTURE**

Second Revised Edition. By LUCILLE S. CARLTON, editor of THE RURAL NEW YORKER; originator of the foremost of Potatoes—Rural New Yorker No. 2.

This book gives the result of 17 years' experiment work on the Rural Grounds. How to In-

crease the Crop without Corresponding Cost of Production. Manures and Fertilizers. The Soil. Depth of Planting. Seed. Culture.

Varieties, etc. It is respectfully submitted that these experiments at the Rural Ground have, directly and indirectly, thrown more light upon the various problems involved in successful potato culture than any other experiments which have been carried on in America. Price, cloth, 75 cents; paper, 50 cents; prepaid.

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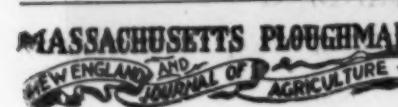
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BOSTON, APRIL 23, 1898.

Persons desiring a change in the address of their paper must state where the paper has been sent as well as the new direction.

WHAT the country districts most need is solid, educated business men with farm training.

SOME men expect to ride a hobby to success, but they will fall, unless there is a good deal of a man behind the hobby.

No man can be healthy with too little exercise or too much, but reasonable moderate labor is best for body, mind and morals.

PUT your money in a safe place where rascals will have small chance to get at it. A wise hen lays her eggs in a thicket of nettles.

THE most numerous pension list in America is that of the rats and mice on the farm. Cross them off the list and get the cat to investigate.

NEW ideas always seem queer at first sight, and the temptation is to hold down; but wise second thought suspends judgment and experiments a little in a quiet way.

THIS is the time of year when a great many farmers will make the worst possible investment by spending their money for low-grade nursery stock and poor seeds.

DONT send the boys away to get a farm when a half or a third of the home place would do just as well. Perhaps a silo and better stock will make half the farm produce as much as the whole did before.

ALMOST anywhere it is possible to find a farmer who says he knows all he wants to know, but his farm tells a different story. Men who make big statements should take care that the crop, the stock, or buildings do not give them the lie.

UPON the average farm there is work enough done and crops enough are raised to make the owner prosperous, but too much of the work is useless and blundering, and too many of the products are wasted or sold to poor advantage. That is where the profits go.

THE project to reclaim waste land by the use of convict labor has gained considerable favor in Massachusetts and the bill looking toward the result is now in full swing on its way toward the legislature. It is an excellent idea to put waste labor at work reclaiming waste land.

A YOUNG man, formerly of Eastern Massachusetts, has bought an abandoned farm in the western part of the state for only \$150. There are five acres, good buildings, a fine spring of water, and the farm is near the railroad station. This young man thinks he has a bargain. Such a farm would make a good plan for poulters.

DESPITE all the talk about no danger of overproduction of eggs, the price during the spring months gets lower and lower every year, and the number of eggs exported continually increase until now more eggs are sent away than are imported. The time is evidently coming when a good share of the egg product if sold at all, must be exported at very low prices.

A MAJORITY of young men who go to the city do not go to ruin, neither do they make fortunes. The most numerous class are those who joggle along making poor to moderate pay and spending about all they earn. This class, in most cases, would have been better off to have stayed in the country, where the outlook for a healthy old age, with a competence would have been much more favorable.

THE reports of the Canadian agricultural experts who have been investigating the agricultural prospects of the Klondike region indicate that the season is too short for almost all crops, but grass and some fodder crops can be grown, also turnips and radishes. The temperature goes down to freezing nearly every day in the year, but the days in summer are very long and growth is rapid.

A "BAD LUCK FUND" is a comfort to the fore-sighted farmer. He knows that he is bound to have about so much bad luck on the average every year. Tools break, animals die, accidents happen, and he sets aside a fixed sum every year, and hopes these losses will be made good, and when the ill fortune comes he has made provision for it, and never feels discouraged but simply draws from the bad luck fund and replaces the loss.

#### How's This!

We offer One Hundred Dollars reward for any case of Catarrh that cannot be cured by Hall's Catarrh Cure.

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Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system. Testimonials sent free. Price 75c. per bottle. Sold by all Druggists.

#### CURRENT TOPICS.

The Cuban question has occupied the entire attention of Congress the past week, and the excitement has been intense. In the House, a resolution favoring armed intervention but not the recognition of Cuba was passed by a large majority, after a very disorderly discussion. The Senate resolution was still more radical, and not only authorized armed intervention but declared Cuba free and recognized the existing Cuban government, in spite of the recommendations of the President and many of the representative men in the Senate. The debate was a general one and notable speeches were delivered by the two Massachusetts senators, Senators Hoar and Lodge, supporting the President's position. The resolution was passed by a good majority. Then came the attempt to effect a compromise between the two branches of Congress. The Senate resolution was sent to the House, but the latter body through the strenuous efforts of Speaker Reed and other leaders in the House, refused to pass it in its entirety, rejecting the recognition section and changing the wording somewhat of the section relating to the freedom of Cuba so as to make it less explicit. When returned to the Senate for approval, that body refused to accept any revision of the resolution but was prevailed upon to appoint a conference committee, which finally reported a resolution which proved sufficiently acceptable to both branches as to receive a majority of their votes. As it now stands, the resolution is as follows:

1.—That the people of the island of Cuba are and of right ought to be, free and independent.

2.—That it is the duty of the United States to demand and the government of the United States does hereby demand that the government of Spain at once relinquish its authority and government in the island of Cuba and withdraw its land and naval forces from Cuba and Cuban waters.

3.—That the President of the United States be, and he hereby is, directed and empowered to use the entire land and naval forces of the United States and to call into the actual service of the United States the militia of the several states, to such an extent as may be necessary to carry these resolutions into effect.

4.—That the United States hereby disclaims any disposition or intention to exercise sovereignty, jurisdiction or control over said island except for the pacification thereof, and asserts its determination when that is accomplished, to leave the government and control of the island to its people.

The Cuban resolutions passed by Congress early Tuesday morning were then sent to the President for his signature which was delayed until an ultimatum could be prepared to send to Spain. These two documents received the President's signature Wednesday morning, the ultimatum, however, not being given to the public until Thursday. The Spanish minister, Señor Polo, immediately applied for his passports, and although at this writing no answer has been received from Spain, it is believed that she will refuse to comply with the demand in the ultimatum, and preparations have been made for the immediate despatch of squadrons to Cuba and Porto Rico in the event of her refusal. Spain has been given until Saturday noon to return an answer to the ultimatum.

While Congress has been debating over the attitude this country shall assume on the Cuban question, preparations for defense and for war, if necessary, have been rapidly pushed forward. It has been announced, that the St. Paul and her sister ship of the American line, both fast ships, are to be taken by the government for auxiliary cruisers. An order for the mobilization of the regular army at points on the southern coast most available has been sent out from the War Department and they will assemble at Chickamauga, New Orleans, Mobile and Tampa. General Miles will be in command, with headquarters at Atlanta. It is also said that the President will call for 50,000 volunteers from the militia. The attitude of the European Powers will probably be a neutral one in the event of war between Spain and the United States. They have nearly abandoned all hope of mediation and Great Britain has shown herself very friendly to this country, steadily refusing to join in any demonstration or movement to intimidate or embarrass the United States in any way.

Beacon Hill Notes.

A bill has been reported providing that the work of the Massachusetts cattle commission shall be done as far as possible through local inspection; that is, doing away with the general testing of herds for detecting tuberculosis. Full compensation is declared with a maximum limit of \$60 per head.

The bill to require milk cans to be kept clean and free from foreign substances has been referred to the next general court.

The governor has signed the bill for the use of electricity in execution of the death penalty.

A message was received from the governor Friday of last week asking for \$500,000 to defray military and naval expenses in the present emergency. The Legislature responded by the immediate enactment of a bill appropriating the amount named out of the tax levy. In case war actually breaks out, it is understood that a loan of \$2,000,000 more will be authorized.

No man need ever worry for fear he will have no chance to show his ability. The common trouble is that when the chance comes the man has not acquired ability to use it as should be used.

#### Literary Notes.

Those who have read and enjoyed "The Silence of Dean Mattland" by Maxwell Gray, will be interested to read another book from the same pen just issued and bearing the attractive name of RUSTSTONE PIPPIENS. It is an English story, of course, very simple in plot and abounding in the country dialect, which may prove something of a stumbling block to some American readers, but does much to create the "atmosphere" for the story. The chief charm of the little tale is the perfect simplicity with which it is told, so that without the least straining for effect, a clear picture is given of English rural life. The cozy thatched cottages, the winding hilly country roads, with their flowered banks, the musical jingling of the wagon bells, chiming out an accompaniment to the merry songs which almost sing themselves, so full of swing and rhythm are they, are all blended into one perfect whole. The reading of it brings to one a breath of free country life, just as the fancy odor of the apples from which the story takes its name carries with it the thought of all the joy and freedom of a happy life, lived near to nature. The little thread of a love story running through it, with the happy ending of merry marriage bells, gives the human interest without which no picture is complete. Harper Bros. New York, Publishers.

VICTOR SERENUS, a story of the Pauline era by Henry Wood, author of "Studies of the Thought World," "Ideal Suggestions," "God's Image in Man," "Edward Burton," "The Political Economy of Natural Law," etc. 12mo. Cloth.

Messer, Lee and Shepard, Boston, have now press a most interesting piece of fiction by Henry Wood, entitled "Victor Serenus."

The scene is located in that very dramatic period of the world's history, the Pauline era, and through graphic character delineation deals with the thoughts, customs, and religious systems of that time. Its aim is to draw a true and well-proportioned picture of the actual conditions, avoiding an overdrawn and debasing realism, so often employed for the sake of exaggerated contrasts.

With unimportant exceptions, Paul is the only historic character, and those who have been privileged to read the advance sheets are of the opinion that the various dramatic and psychological situations which are depicted during his unique development are remarkable. Victor Serenus, and the other leading personalities that are employed, are representative creations.

While the historic framework is carefully preserved, there is a wide range of fancy and imagination in the movement, and a wealth of mystical, physical and weird phenomena deftly woven into the fabric of the story. Love, adventure, romance, idealism, and magic are handled in action to combine entertainment, instruction and profit. Mr. Wool's former books, which have passed through many editions, have been mainly philosophical, ethical, and metaphysical, (one of which, "Ideal Suggestions," has been translated into Chinese, and had a wide circulation in that empire,) but in the present work the grace of the imagination stand out with great power in action, style and purpose.

The book is a closely printed volume of five hundred pages, and good judges predict it is a great circulation and popularity. [Price \$1.50.] Lee & Shepard, Boston, Publishers.

#### Reducing the Cost.

The most expensive and most important element in fertilizers is nitrogen, and whatever tends to reduce the cost is a benefit to the agricultural community.

Nitrogen is obtained from several sources, nitrate of soda and sulphate of ammonia being largely used for this purpose. Nitrate of soda comes chiefly from Chile, where it is under the control of a monopoly which regulates and maintains the supply and to this end Nitrate of Soda is like any other commercial commodity in that supply and demand regulates the price. Take, for example, sulphate of ammonia which fluctuates constantly, more so than nitrate of soda. Last year when the works at Johnstown, Pa., and the works at the port of Santos, Brazil, became greater, prices fell to the announcement of the intention of the New England Gas and Coke Company to build its works on the Mystic decreased the price still more. As there is about 23 pounds of sulphate of ammonia in a ton of coke, the price was burned to make coke, the supply would be very largely increased to the great advantage of New England and the whole United States in lowering the price.

The price to be paid in passing, from figures obtained from the Journal man at Amherst, that from 1882 to 1894, twelve years, sulphate of ammonia ranged price from \$90 a ton; the lowest was about \$60. Last year it fell, but has gone up to about \$60. It may be interesting to note that in 1894, Paul and Davis, Journal of New York, a standard on such matters, the average wholesale ton price of sulphate of ammonia for the past six months, which were as follows:

Ton price for Sept., 1897.....\$42.38 to \$43.50

Ton price for Oct., 1897.....\$43.50 to \$44.00

Ton price for Nov., 1897.....\$43.74 to \$46.70

Ton price for Dec., 1897.....\$43.74 to \$46.70

Ton price for Jan., 1898.....\$47.60 to \$48.60

Ton price for Feb., 1898.....\$41.40 to \$42.40

Average for March, 1898.....\$41.40 to \$42.40

Average for the six months.....\$43.94 to \$47.94

The average price by fertilizer dealers in large quantities to farmers during the same time has ranged from \$52 to \$60. This year the price is from \$59 to \$60, whereas six months ago it was down to \$52.

Meanwhile, nitrate of soda has averaged at wholesale from \$35 to \$34 a ton and by dealers \$39 to \$40.

Dr. Goessman said: "Blood and animal manure always contain a large amount of nitrogen, but we can get it at a considerably lower price from sulphate of ammonia. Sulphate of ammonia is equal to the best nitrogen sources we have. At present it is chiefly imported, and because it is so largely used in Europe and England our supply is limited, but if produced in large quantities, it will be a valuable addition to our agriculture." The great danger accomplished by the smuts has attracted the attention of agriculturalists even as far back as the days of ancient Greece and Rome. If left unchecked these smuts increase from year to year until a large per cent of the crop is destroyed. The methods of treatment described in the bulletin mentioned will enable every progressive farmer to entirely prevent the trouble.

#### NEW HORSE DISEASE.

The Maryland Experiment Station, at College Station, near Washington, District of Columbia, has just issued a bulletin (No. 53) concerning the so-called "new horse disease" in Maryland. It is shown, however, by the joint investigations of the State Veterinarian and the Veterinarian of the Station that the disease is the same as that described by Prof.

Large of Brooklyn, under the name of "cerebro-spinal meningitis," and appearing in the "Diseases of the Horse." The disease is the same as that described by Prof.

General Stone, Chief of the Good Roads Division of the Department of Agriculture, has in behalf of the Department, made arrangements with the Cambria Iron Company for rolling special rails for more extended experiment in the use of steel trackways on wagon roads. General Stone and the engineers of the iron company have after much discussion agreed upon a plan which promises to meet the requirements. No wood is used in construction and no cross ties for support. The track consists of a simple inverted trough or channel for each wheel, with a slightly raised bead on the inside to guide the wheel, each channel resting on a bed of gravel and the two tied together occasionally to prevent spreading.

The experiment promises a step forward in the matter of improved roads, and the ability to readily market heavy loads at a minimum expense in power.

#### ADDITIONAL GARDEN TALK.

Some mention was made in a recent letter on the importance and value of a good garden on the farm and the desirability of a large garden with long rows, adapted to horse cultivation, as against the "hand garden." The advantage of a garden so planted as to allow the bulk of the cultivation by horse power is unquestioned. With a good adjustable cultivator or horse hoe, the superior strength of the horse will suffice to do in a minute what a man can accomplish no better in fifteen minutes. In any event, even with most thorough and satisfactory horse cultivation, there is always sufficient hand work to satisfy the most industrious. But such a plan of operation applies only to the farm, where there is comparatively plenty of land which can be set aside for the garden.

But the small garden is necessary in many instances. One of the best features of America and American living among the great middle class, and a feature in marked contrast with the condition among the middle class of European countries, is the ability of thousands of workmen and small business men to own little pieces of land upon which they can grow many of the supplies for their tables. To such a class of citizens, the "hand garden" of course is the practicable one. Their ground supply is limited and their aim must be to get the ground as rich as possible and then grow the greatest amount of growth into it, compensating for additional space by extra care and attention and additional cultivation.

"Very much so. We have licensed over 60 manufacturers of fertilizers in this State alone, and while it is impossible to estimate the total consumption, I can say that it is very great, and it is causing a great deal of vital importance to the farming community.

"It would be more so if the cost was lower, but while nitrogen is so expensive fertilizers will not be lower, so their use will be restricted.

"You see, there are a number of ways to fertilize the soil. Manures may be used.

"Organic matter in the soil, or a crop like clover may be raised and then ploughed in, all that is done will be most valuable, for organic matter is often more valuable than mineral matter, because it has their defects from the fact that they may be deficient in one or another chemical, and for this reason, even when concentrated fertilizers are not used alone the chemical fertilizers are used to reinforce organic fertilizers, and in this way the highest results may be accomplished. The great objection to organic fertilizers of any form is the time consumed in getting them into serviceable condition, during which the land is not valuable. This is avoided by the use of chemical fertilizers.

"The United States Government recognized the importance of the work of studying fertilizers and their most effective use in its agricultural college grant under the Morrill Act in 1867, and in the Hatch bill in 1887, establishing experimental stations in every State and Territory, so that today a great work has been done in the scientific study and demonstration of chemical fertilizers. The next step to be taken should be that of utilizing these by-products, the cheapening of fertilizers so that farmers, gardeners, people with grounds, lawns, patches, etc., may benefit by the scientific knowledge obtainable in the experimental stations, through the ability to use the best manure which will follow the cheapening of their cost."

Dr. Goessman is anxious awaiting news from Eastern Massachusetts regarding the New England Gas and Coke Company's new plant to be built at Everett. He is to be State Inspector of Fertilizers, and stands at the head of his profession after 40 years' active experience.

"In what way would this be accomplished, doctor?" asked a Journal reporter, who interviewed him recently at Amherst.

"By the increased production of sulphate of ammonia, the most important basis of chemical fertilizers, which increased production would mean a reduction in the price with a consequent great increase in consumption."

"Is sulphate of ammonia so important?"

"Very much so. It is the chief fertilizer used."

"Are chemical fertilizers much used?"

"Very much so. They are used in all kinds of soil, and are the chief fertilizer used."

"What is the chief fertilizer used?"

"Sulphate of ammonia is the chief fertilizer used."

"Is sulphate of ammonia so important?"

"Yes, it is the chief fertilizer used."

"Is sulphate of ammonia so important?"

"Yes, it is the chief fertilizer used."

"Is sulphate of ammonia so important?"

"Yes, it is the chief fertilizer used."</



## THE HOUSEHOLD.

## BUGS IN A BASKET.

Three little bugs in a basket,  
And hardly room for two!  
And one like me or you,  
The pace was slow, I doubt, for all,  
But we could three bugs do?  
Three little bugs in a basket,  
And hardly room for two;  
All were seafish in their hearts,  
The same as for you.  
So the crafty ones said, "We will eat the bread,  
And that is what we will do."

Three little bugs in a basket,  
And the bugs but two would hold;  
So they all three fit to go.  
The white, the black and the gold.  
And two of the bugs got under the rug,  
And one was out in the cold.

So he that was left in the basket,  
Without a crumb to chew,  
Or a thread to wrap himself withal  
When the wind across him blew,  
Pulled one of the rugs from one of the bugs,  
And so the quarrel grew.

And so there was war in the basket,  
Oh, pity us 'tis true!  
But he that was frozen and starved at last  
A strength from his weakness drew,  
And pulled the rug from both of the bugs  
And killed and ate them, too.

Now, when bugs live in a basket,  
Though more than it well can hold,  
It seems to me they had better agree—  
The white, the black and the gold—  
And share what comes of the beds and crumbs  
And leave no bug in the cold.

## THE TRUE STORY OF A SAUCE.

This is a true story of low life and also of a great sauce. What his real name was no one ever knew. He had come into Rivington street in the arms of a drunken woman who inexplicably had considerable money. On this account, and also on account of her generosity, she was welcomed by the society of that down-town district.

Her name was Mary. Her family name was somewhat obscure. Once when arrested she gave it as Jones, another time as Schmidt, a third as Bonaparte, and a fourth time as Washington. This variety showed her to be a woman of some information, if nothing else.

The baby was a bright-eyed little thing which was lame. The woman was kind enough to it in her own rough way and left the child largely to its own resources.

It was clever and soon found out which of the neighbors were kind and liked children and which did not. Jamsey, for so it was called by its mother, managed to get along like thousands of others in the submerged Tenth. He grew, but on account of his infirmity grew in a different way from the other children of the neighborhood. He did not care much for playing, but liked housekeeping, dolls, and other girlish recreations. When he was four he could make himself quite useful in the kitchen and was so careful that he could be safely intrusted with plates and tumblers.

When he was six his mother died.

No one ever appeared to claim the body and the city buried it without ado. The kind-hearted policeman talked of taking the boy to a nice orphan asylum, where the children are all dressed in uniform and are trained to walk alike, talk alike, eat alike, read alike and think alike and very often to misbehave and die sick.

He found to his surprise that even down in Rivington street there was an invincible antipathy to asylums. Mrs. Mueller, a childless German woman, said that the boy should stay with her as long as she lived and that no Irish policeman should take it away and have it ruined in an asylum. So Jamsey became a member of the Mueller family, which consisted of the lady in question and her husband, who was employed in an uptown brewery.

Mrs. Mueller, like all German housewives, had a mania for cleanliness. In her particular religion it preceded godliness. She had the same reverence for a scrubbing brush that a poor Hindu has for Juggernaut, while a bar of soap gave her more pleasure than the heaviest black silk dress.

Undoubtedly the cornerstone of her love for Jamsey was his taste for household pleasures, and they made a fine pair.

Although lame, he would lend a fair hand to her scrubbing up the floors and polishing the windows and doing the family ironing. He was invaluable in washing and wiping the dishes, and by degree he came to cook all her favorite dishes as well as she herself did.

Once or twice she let him cook by himself, when he surprised her by the tastiness of his finished work. After that, when she had what she considered leisure, she would teach him all the secrets of old German country cooking as she had learned it in her youth, of fashionable Berlin cooking where she had been a cook some eight years before marrying and coming to this country.

Jamsey made wonderful progress and at thirteen, as Mrs. Mueller fondly admitted, was almost as good, if not very much better, than herself. The old lady had not neglected Jamsey's education. He had gone to the public school and had made fair progress. He had learned German from Mrs. Mueller and her husband and picked up a capital smattering of French from Monsieur Bonhomme, the poor little cobbler in the basement of the tenement.

About this time Jamsey heard of the cooking school. It was conducted by some charitable ladies who lived uptown and was held one evening a week.

He obtained Mrs. Mueller's consent and applied for admission. He was a pretty boy; although poor, was as clean and neat as if he had been a millionaire's son. Although older than the other children, he was admitted to the class.

Before the first lesson was over the teacher found in amazement that in many respects the boy knew more of cooking than she did. After three months had passed, she said to him one day:

"Jamsey, you had better go to a higher school."

Jamsey knew of none.

"Didn't his friends know?"

Jamsey had no friend.

The teacher thought herself and gave him a letter to an eminent teacher of cookery uptown. He was very well received when he presented the letter, but he was broken-hearted when told

that the instruction cost twenty-five dollars a quarter.

Jamsey had never had more than a few cents in all his life. He mused a little while and then he said:

"Please, ma'am, I want to learn cooking with you, and I haven't got any money. But if you'll teach me what you know I'll teach you what I know, and I'll wash your dishes and clean your kitchen besides, in the bargain."

The professor of culinary art laughed very heartily, and being a good natured soul took Jamsey upon these terms. One day a pupil desired to learn how to make two or three German dishes. Her husband expected to entertain some friends from Berlin and wished to surprise them. The professor was at a loss to answer, being, as a matter of fact utterly unfamiliar with Teutonic cooking. Jamsey, seeing the dilemma, whispered to the teacher:

"I know how. You let me teach her."

The professor said: "Thanks, Jamsey," and told the pupil that her assistant had made a specialty of German cooking and would be only too glad to give her the requisite tuition.

The lady accepted and Jamsey was unspeakably happy. He gave three lessons and did it so well that both professor and pupil were deeply pleased.

Better still, the pupil, who was very well to do, gave the little cripple a five dollar bill. He thanked her, chuckled, and then went home as fast as he could. "My son, that is the best sauce I have tasted in ten years. You can put on your cap and apron and go to work now, and I am very glad to get so promising an assistant in my kitchen."

The sauce has been made many hundred times in that restaurant since then and is as popular as ever.

Jamsey has risen to be the second in command and is looked up to by all the other employees of the house, and Frau Mueller has left Rivington street and presides over a very pretty flat near Central Park, where Jamsey makes his home.—Ex.

"Can you cook in French and German styles?"

"Yes," said Jamsey, proudly.

"Well, you are a brave boy, and I'll try you, anyhow. You go over there that stove and cook me some lamb chops in some French way and also in some German way, and if they are all right I'll engage you."

Jamsey went to work in a hurry. The other cooks looked on amused by the boy's enthusiasm. He picked out a German sauce which he had learned from Frau Mueller and improved upon himself. For the other dish he made a special sauce which the cooking professor had taught him.

They were about finished, and he had

raised the saucepan containing one, when a clumsy scullion going past, either by accident or through mischief, ran against him, and the contents of one saucepan went into the other.

It had no more than happened when the chef reappeared from some other part of the great establishment below stairs. He walked over to where the speechless boy stood and said:

"Hello, that's a handsome sauce. I don't remember ever having seen it." He took the large spoon that was in it and stirred it. The stirring gave a finish to the mixture, which made it very attractive to the eye. It was of a rich green, with a wonderful perfume and a smooth, velvety exterior that was very appetizing. The chef raised the spoon and tasted it, smacked his lips and said:

"My son, that is the best sauce I have tasted in ten years. You can put on your cap and apron and go to work now, and I am very glad to get so promising an assistant in my kitchen."

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## Frances Willard's Counsel to Girls

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her home, and sent me away laden with volumes of Wordsworth, Niebuhr and the British essayists, not forgetting Carlyle and Emerson; Margaret Fuller Ossoli was another fixed point—shall I not rather say a fixed star?—in the sky of my thought, while Arnold of Rugby, to one who meant to make teaching a profession, was chief of all. Well, is it possible that any word I have here written about a definite object in life toward which henceforth you may bend a steady gaze? I am not speaking of a thorough intellectual training only. It is to the life work which only a lifetime can fully compass, that I would direct your thoughts.

## CALLING THE FLOWERS.

Wake! drowsy-down-dilly, tucked under the sun.

Turn softly, I pray, on your pillow of down: Come up, stretch your sweet limbs now, my pretty, and grow—

Grow fast, to the size of your yellow spring gown.

Little crocus, asleep 'mid the roots of the grass;

Come up for your mantle of purple or gold;

And, my dear, give the snowdrop a nudge as you pass,

'T is time for her white frock, in spite of the cold.

The woodpecker plumes in the orchard, his crest;

And there is a bluebird this minute! The dear!

Wake up, little blossoms! 't is time to be waked.

Hurry up now, my pretties! Spring is here!

—Christian Register.

## THE HOME CORNER.

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